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AUTHORITY

SMUFD D/A ltr, 18 Feb 1972

TRANSLATION NO. 2773

DATE:

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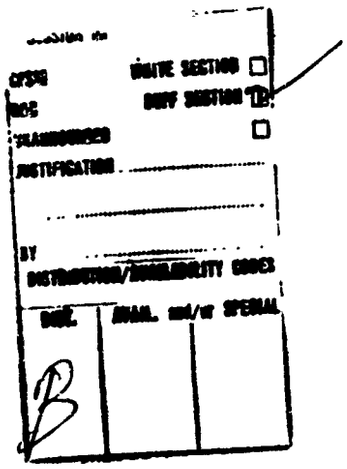
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INFECTIONS FROM VIRUS ARBOR: GENERAL OBSERVATIONS

[General Observations* by Dr Carlos Campollo Sainz**; Mexico City, Gaceta Medica de Mexico, Spanish, Vol XCIII, No 5, May 1963, pp 385-387]

The Arbor viruses -- from English, arthropod borne -- are those which in nature have the faculty of multipying in the bodies of hematophagous arthropods, in which they do not cause signs of illness or visible tissue lesions; in addition, they are capable of producing symptomatic infections in some vertebrates, such as birds and mammals.

The Arbor viruses are not transmitted directly from vertebrate to vertebrate, but need the help of arthropod carriers. The vertebrate host, in whose blood the virus

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* Section paper (Preventive Medicine and Hygiene), read at the 29 August 1962 meeting.

** Director of the National Virology Institute of the Secretariat of Health.

circulates, is the source of infection of the arthropod which, after the so-called extrinsic incubation period, can in its turn transmit the virus to new hosts by means of a bite. The viruses transmitted by arthropods by any mechanism other than the bite are excluded from the Arbor group. The Arbor viruses, which are the most numerous of all those that infect man, are grouped according to the ecological relations of carrier and host, the former arthropod, and the latter vertebrate. At the present time 160 of them are known, of which not less than 54 produce infections in human beings. Their geographic distribution covers the five continents; in South America there are 58, in Africa 35, and in North America, 13. From the immunological point of view they are divided into four main groups: A, B, C, and Bunyamwera. Group A, comprised of 15 viruses, includes those of equine encephalitis of the East, the West, and Venezuela, which are outstanding. Group B is the largest, being made up of 33 viruses; it includes, among others, the virus of St Louis, Japanese B, and Russian Spring and Summer encephalitis; it also includes the yellow fever virus, dengue with its four types, and a virus recently discovered in India which produces the Kyasanur forest disease, whose epidemiology is very similar to that of yellow fever. The seven viruses of the C group have been isolated in the region of Belem, Brazil. On the other hand, those of the Bunyamwera group, made up of

approximately 20, exist almost throughout the world. A little over 25 of the Arbor viruses have been temporarily placed in nine subgroups; the remaining ones are pending classification.

The large taxonomic groups were formed taking as the basis the hemagglutination reaction carried out according to the technique of Casals, who has the merit of having started the difficult task of classifying over 100 Arbor viruses. By means of the techniques, which Casals repeatedly perfected, hemagglutinant antigens are obtained from the majority of the agents with which we are dealing. The hemagglutination reactions which are carried out with goose erythrocytes have considerably simplified the antigenic study of this virus, and thanks to them it was possible to carry out serological research on a large scale. The tests of neutralization are already being done on mice or on tissue cultures; they are more specific than the previous ones, because they allow the identification of the viruses of the various groups. It is advisable to use them after the hemagglutination reactions have supplied the initial information. As to the specific reactions of complementary fixations, they have an intermediate place between the two above-mentioned ones.

In addition to the antigenic relations which exist between them, the Arbor viruses have common properties: their genetic material is made up of ribonucleaic acid,

their size varies between 20 and 100 milimicrons; they multiply in the nucleus and cytoplasm of the cell, on the surface of which the infecting particles mature; and finally they are sensitive to ether and sodium desoxycolate.

The effort made in the past 10 years in the research of the Arbor viruses has no precedent in virology. The initial stimulus came from the Rockefeller Foundation, which was able to gather a group of dynamic researchers around the vigorous personality of Dr Theiler. Basic studies began actively in the New York laboratory, while the Rockefeller Foundation, at the same time, established field laboratories in Cairo, Egypt; Poona, India; Johannesburg, South Africa; Trinidad and Belem, in South America; and California in North America. In this manner the research carried out in this field reached world proportions. The findings were so numerous that it became difficult for the researchers to keep their information up to date.

The World Health Organization called attention to this point at the 6th International Congress on Tropical Medicine and Malaria, which was held in Lisbon in September 1958. The following year, the Rockefeller Foundation sponsored a meeting in New York, where a group of U.S. researchers decided to form information exchange subcommittees. From then on, the so-called "Letters of Information Exchange on Arbor Virus" have been published, of which five

issues have appreated up to t[illegible] preliminary reports on the projects that are be[illegible] carried out throughout the world. This material circulates exclusively among the people who are working on the problem, the data they contain cannot be used for publication. In Mexico they are received by the National Institute of Virology of the Secretariat of Health, and by the Children's Hospital Virus Laboratory. In addition, the information subcommittee, in line with the commitment it has contracted, has published a catalogue listing 124 classified viruses. All the data which, up to the date of issuance, it was possible to gather on each one of the viruses in the catalogue, appear on the respective cards.

Because of this, it was believed to be advisable to bring to this academy some of the present concepts on this important chapter of virology, which is in full development. The general analysis of the epidemiological features, followed by clinical considerations, and finally the report on the studies being carried out by the National Virology Institute of the Secretariat of Health, will be dealt with in the successive lectures you will be hearing.

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